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## THE GROUP OF ACALYPHA VIRGINICA IN EASTERN NORTH AMERICA.

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IN 1845, in the 34th volume of *Linnaea*, Mueller Argovensis proposed four varieties of *Acalypha virginica* L. (one the typical form, one based on *A. gracilens* Gray, and two original), and he repeated this treatment in more detail in the 15th volume of the *Prodromus*. With the exceptions of Gray, who made casual mention of one of Mueller's varieties in the fifth edition of the *Manual*, and Rafinesque, who sprinkled names about with his usual generosity, but with no very sure aim, I find no other author who has recognized more than two species (*A. virginica* and *A. gracilens*) or varieties in the group. A recent investigation of it, however, undertaken in response to a query of Mr. C. C. Deam, convinces me that Mueller was essentially correct; that there are not only two, but three taxonomic entities concerned, readily recognizable when once understood and separated by characters no one of which is perfectly constant, but which in general correlate so well as to make treatment as three species desirable. Mueller's fourth variety shows no specific characters, but may be maintained as a variety under *A. gracilens*.

It is pleasing to find that similar conclusions had been arrived at independently by such excellent taxonomists as Dr. S. F. Blake and Mr. Bayard Long. That confusion has resulted from the failure to recognize the third species (*A. virginica*, var. *intermedia* Muell. Arg.) is sufficiently evident from the herbaria examined. In them it appears sometimes as *A. virginica*, sometimes as *A. gracilens*, sometimes without a name.



I have received indispensable assistance from Dr. Blake, who generously turned over to me his notes on specimens in old European herbaria, and from Mr. Deam, who lent me not only the large representation of the group in his private herbarium, but his critical notes on the specimens. I have had the privilege of examining the specimens in the herbaria of the New York Botanical Garden and of the Torrey Botanical Club. To all who have aided me, my hearty thanks are proffered.

Specimens cited are in the Gray Herbarium unless otherwise noted. "N. Y." indicates the herbarium of the New York Botanical Garden; "N. E. B. C." that of the New England Botanical Club.

- A. Pistillate bracts deeply cut into 5-7 (rarely 9) oblong to lanceolate acute or obtusish lobes, beset, at least when young, with long-stipitate whitish glands, sometimes ciliate but not hispid; primary leaves mostly ovate to rhombic-ovate, on petioles  $\frac{1}{3}$  to nearly as long as the blade, the leaf-tissue glabrous except for scattered long hairs B.
- B. Seeds 1.6-1.8 mm. long ..... *A. virginica*.
- B. Seeds 2.5-3 mm. long ..... *A. virgin.*, var. *Deamii*.
- A. Pistillate bracts with 9-15 lobes or teeth; primary leaves mostly ovate-lanceolate to linear, often pubescent beneath or on both surfaces C.
- C. Pistillate bracts rather deeply cut into mostly lanceolate, very acute lobes, hispid on nerves and margin, usually not glandular; stems with at least a few long, spreading hairs, often villous; primary leaves broadly to narrowly lanceolate, tapering to a blunt point, on petioles  $\frac{1}{3}$ - $\frac{1}{2}$  as long as the blade ..... *A. digyneia*.
- C. Pistillate bracts shallowly cut into ovate or broadly deltoid lobes or teeth, sparsely beset with stipitate whitish or sessile red glands, sometimes ciliate, otherwise glabrate to coarsely pubescent; stem puberulent to pubescent with incurved or ascending hairs; primary leaves oblong-lanceolate to linear, mostly obtusish or abruptly contracted to apex, on petioles  $\frac{1}{4}$ - $\frac{1}{10}$  as long as the blades D.
- D. Capsules mostly maturing 2-3 seeds; lower branches, when present, arcuate-ascending E.
- E. Staminate spikes 5-15 mm. long; pistillate bracts approximate if more than one; plant usually finely and sparsely pubescent; leaves oblong-lanceolate, or at least not linear; branches mostly numerous in vigorous plants. . . *A. gracilens*.
- E. Staminate spikes 2-4 cm. long; pistillate bracts, if more than one, often distant; plant usually rather densely pubescent; branches usually none or weakly developed; leaves commonly linear ..... *A. gracilens*, var. *Fraseri*.
- D. Capsules usually maturing only 1 seed; whole plant coarsely and densely pubescent, when well developed with numerous strongly ascending subfastigate branches; staminate spike 1 cm. or less long. . . . *A. gracilens*, var. *monococca*.

ACALYPHA VIRGINICA L. Sp. Pl. 1003 (1753), excl. syn. Fl. Zeyl.



and Gronov. *A. caroliniana* Walt. Fl. Car. 238 (1788)?, certainly "*A. caroliniana* Walt." Michx. Fl. Bor. Am. ii. 216 (1803). *A. crenulata* Raf. New Fl. i. 44 (1836) as to synonym cited. *A. rhomboidea* Raf. op. cit. i. 45 (1836). *A. virginica*  $\alpha$  *genuina* Muell. Arg. Linnaea xxxiv. 44 (1865).—Stem simple or with widely spreading branches from the lower nodes, puberulent with incurved hairs (often only in lines) or nearly glabrous, very rarely with a few long, spreading hairs; primary leaves ovate-lanceolate to rhombic-ovate, tapering to a blunt apex, coarsely crenate or crenate-serrate, the margins slightly appressed-ciliate, the nerves beneath and mid-vein above sometimes puberulous, otherwise glabrous except for a few coarse appressed white hairs; petioles from  $\frac{1}{3}$  to nearly as long as the blades, mostly  $\frac{1}{2}$  as long or more, puberulent like the stem; leaves of the branches narrower and with shorter petioles; pistillate bracts strigillose on nerves and margins, sometimes long-ciliate, but not hispid, sparsely beset with long-stipitate, more or less deciduous, whitish glands or rarely quite glabrous, its 5–7 (–9) deep lobes oblong to lanceolate, acute or obtusish; staminate spike 4–10 mm. long, usually not exceeding the bract; seeds 1.6–1.8 mm. long. Like other annuals, varies greatly in size, plants in arid situations being often only 15 cm. tall with primary leaves 2–3 cm. long, in rich soil reaching 5.5 dm. in height, with primary leaves 5–8 cm. long.—Nova Scotia, Maine and Southwestern Quebec to Minnesota (according to MacMillan) and Nebraska, south to Florida, Tennessee and Kansas. Apparently rare southward.

The following specimens, mostly from numbered sets, are representative. QUEBEC: Ironside, Vallée de la Gatineau, Aug. 20, 1921, *Fr. Rolland*, no. 15932. MAINE: fields, Orono, Sept., 1890, *Fernald*. NEW HAMPSHIRE: dry soil, roadsides, Hampton Falls, Sept. 22, 1901, *B. L. Robinson*, no. 740. MASSACHUSETTS: roadside, Concord, Oct. 9, 1898, *Greenman*, no. 497. CONNECTICUT: New Haven, *D. C. Eaton*. NEW YORK: Ithaca, Sept. 10, 1915, *C. C. Thomas*, no. 4490; exposed bar at east end of Beebe Lake, Ithaca, Aug. 27, 1913, *Palmer & Eames*, no. 749. NEW JERSEY: Deans, July, 1891, *Halsted's American Weeds*, no. 86. MARYLAND: moist places, Cabin John, Oct. 10, 1912, *Maxon*, no. 5961. WEST VIRGINIA: bed of Shaver's Fork near Parsons, Tucker Co., Sept. 9, 1904, *Greenman*, no. 404. FLORIDA: Chattahoochee, *Curtiss*, no. 2513. ONTARIO: Ottawa, Aug. 13, 1894, *Macoun*, no. 5891. INDIANA: low place in woods along Tippecanoe River near Leiter's Ford, Sept. 14, 1921, *Deam*, no. 34691. KENTUCKY: near Poor Fork P. O., Harlan Co., Aug., 1893, *Kearney*, no. 275. ILLINOIS: old cornfield, Riverdale, Sept. 7, 1906, *Lansing*, no. 2622. IOWA: ledges, Boone Co., Aug. 15, 1896, *Pammel & Ball*, no. 196. KANSAS: low ground, Riley Co., July 9, 1895, *J. B. Norton*, no. 487. NEBRASKA: Paddock, July 28, 1893, *Clements*, no. 2793.



Like many another Linnaean species, *Acalypha virginica* is a complex and it is necessary to restrict the application of the name to one of the constituent elements. This was done, in effect, by Mueller when he established his *A. virginica*  $\alpha$  *genuina*, and his decision should stand. A statement of the case in detail may, however, be worth while.

There is no diagnosis originating in the Species Plantarum, Linnaeus merely citing phrase-names from earlier works. These citations include a plant of Ceylon (Linnaeus, Fl. Zeyl. no. 342), presumably *A. brachystachya* Hornem.; but in view of the name chosen for the species by Linnaeus and universal usage since, this may be at once excluded for purposes of typification. The other references are to Linnaeus's Hortus Cliffortianus 495 and Hortus Upsaliensis 290, Plukenet's Almagestum 248, t. 99, fig. 4,<sup>1</sup> and Gronovius's Flora Virginica 116.

Of the works cited, the earliest in point of time is that of Plukenet. His phrase-name would apply to any member of the group. His figure represents the upper portion of a plant with ovate-lanceolate, crenate-serrate leaves on petioles  $\frac{1}{3}$  to  $\frac{1}{2}$  as long as the blade, and with long and prominent staminate spikes. The latter condition is rare in *A. virginica* as here understood, but frequent in *A. digyneia*; taken by itself, the figure could be as well, or better, referred to that species and was perhaps so understood by Michaux and Willdenow. Dr. Blake's notes, however, state that the specimen in Plukenet's herbarium "which is the original" of the figure is *A. virginica*  $\alpha$  *genuina* of Mueller.

Clayton's no. 201, on which the Gronovian reference rests, is, as shown by Dr. Blake's notes and a tracing of the specimen in the Gray Herbarium, *A. digyneia*.

Of Linnaeus's own works, the Hortus Cliffortianus merely refers back to Plukenet, adding, however, in the diagnosis a phrase "involucris femineis obtusis" which could hardly apply to *A. digyneia*. In the Hortus Upsaliensis we get a more definite clue, not indeed in the description, but in the statement that the plant concerned had

<sup>1</sup> The reference in the Species Plantarum is actually to "Burm. Zeyl." an error which is corrected in the second edition. Even without the correction, the correspondence of phrase-name and plate-number to citations of Plukenet in the earlier works of Linnaeus, as well as the facts that there is no page 248 in Burmann's Thesaurus Zeylanicus and no figure 4 in his plate 99 and that that plate represents a species of *Cleome*, would show that Plukenet was intended.



made itself only too much at home in the "Caldarium" and "Vaporarium" of the Upsala garden.<sup>1</sup> There was then, a plant which Linnaeus had seen in the living state; according to Mueller, there is a specimen of it in the Linnaean herbarium. This specimen may reasonably be taken as the type of the species; Mueller, who had a clear understanding of the groups involved, determined it as his *A. virginica*  $\alpha$  *genuina*.<sup>2</sup> The name *virginica* is accordingly here applied in that sense.

This is happily in accord with usage for some 75 years past; earlier authors, however, made a different interpretation. As shown by his description and a fragment of his specimen in the Gray Herbarium, Michaux applied the name *A. caroliniana* Walt. to the plant here called *A. virginica*, and *A. virginica* L. to *A. digyneia*. Whether he was correct in his use of Walter's name can now hardly be made out. There is no specimen of *A. caroliniana* in the Walter herbarium; his description calls for a combination of villous, crenate involucre and ovate, serrate leaves which hardly exists in fact. Dr. Blake's notes state that Walter's *A. virginica*, which is represented in his herbarium, is actually the plant here so called. Elliott and Rafinesque can, it would seem, hardly be right in identifying *A. caroliniana* Walt. with the plant now called *A. ostryaefolia*; it appears scarcely possible that Walter would have failed to mention the spicate inflorescences of that species.

Willdenow, Pursh, Beck and the earlier editions of Eaton (up to the fifth) followed Michaux's treatment. With the publication of Gray's Manual and his segregation of *A. gracilens* (a species apparently overlooked by earlier authors or, if known to Rafinesque, not intelligibly described by him) the name *virginica* came more and more to be applied primarily to the broadest-leaved of the three plants, except by Wood, who never recognized *A. gracilens*.

*A. VIRGINICA* L., var. **Deamii** n. var., planta valida, 3.6–6.8 dm. alta, fere glabra; foliis primariis late rhombeo-ovatis 7.5–10.5 cm. longis 4.5–6.5 cm. latis, teste collectore pendulis, petiolis longitudinis pro  $\frac{3}{4}$  laminam aequantibus; capsulis seminibusque magnis, eis 2.5–3 mm. longis.

Plant large, 3.6–6.8 dm. tall, nearly glabrous; leaves broadly rhombic-ovate, 7.5–10.5 cm. long, 4.5–6.5 cm. wide, according to the collector drooping, the petioles about  $\frac{3}{4}$  as long as the blade; seeds

<sup>1</sup> "Hospitatur in Caldario & Vaporario, ubi nimis luxuriat & se ipsam multiplicat, annua" Hort. Ups. 291.

<sup>2</sup> Mueller's statement is merely this, in the synonymy of *A. virginica*  $\alpha$  *genuina*: "*A. Virginica* L. Hort. upsal. p. 290 (fide herb. Linn.!)". But there can be no doubt of its meaning.



2.5–3 mm. long, the capsules correspondingly large.—*A. urticifolia* Raf. New Fl. i. 45 (1836)?—SOUTHERN INDIANA: Roadsides along Whitewater River northeast of Logan, Dearborn Co., Oct. 20, 1924, Deam, no. 41,107, TYPE in herb. Deam (isotype in Gray Herb.); low place in woods, 9 mi. north of Rockport, Spencer Co., Oct. 11, 1916, Deam, no. 22,351 (hb. Deam); moist bank of Patoka River, 4 mi. southwest of Patoka, Oct. 7, 1917, Deam, no. 24,201 (hb. Deam).

Individual plants of typical *A. virginica* nearly as large as those of this variety can readily be found in rich habitats, but in them there is no increase in size of seed and capsule. The further fact that Mr. Deam's plant is found essentially uniform in character along the southern border of Indiana across the whole width of the state indicates that it is a real genetic development, worthy of taxonomic recognition. Mr. Deam states that the leaves regularly droop, as in *A. ostryaefolia*, and that they do not in ordinary *A. virginica*.

This may be *A. urticifolia* Raf. which was said by him to be "sesquipedal, smooth," to have ample, ovate, acute leaves, and to occur in western Kentucky and Tennessee, a region in which var. *Deamii* might naturally be found. The capsules of the latter, however, are neither smooth nor scrobiculate, as described by Rafinesque. His plant was certainly some form of *A. virginica*, whether this variety or not can hardly be made out. In any case, the name is invalidated by the earlier *A. urticifolia* Poir. (1804).

*A. DIGYNEIA* Raf. Fl. Lud. 112 (1817). *A. virginica* L. Sp. Pl. 1003 (1753), as to syn. Gron. only. "*A. virginica* L." Michx. Fl. Bor. Am. ii. 215 (1803), also of Willd., Pursh, Elliott, and Raf. *A. crenulata* Raf. New Fl. i. 44 (1836), as to plant described? *A. brevipes*, var. *pubescens* Raf. l. c.? *A. virginica*  $\beta$  *intermedia* Muell. Arg. Linnaea xxxiv. 45 (1865).—Stem simple or with horizontally spreading or loosely ascending branches from the lower nodes, densely puberulent or pubescent with short incurved hairs and nearly always with at least a few long, straight, spreading hairs also, often villous; petioles pubescent like the stem, those of the primary leaves  $\frac{1}{3}$ – $\frac{1}{2}$  as long as the blade; blades mostly ovate-lanceolate to narrowly lanceolate, tapering to a blunt point, shallowly and remotely crenate, with short, coarse, sparse, appressed white hairs or sometimes pubescent above, beneath more or less pubescent with short, fine, straight hairs or rarely glabrate, mostly 4–5 cm. long and, even when larger, rarely exceeding 2.5 cm. in width; pistillate bract cut rather deeply ( $\frac{1}{3}$ – $\frac{3}{5}$  of its height) into 9–15 (usually 9–11) narrowly lanceolate sharply acute lobes, more or less hispid on nerves and margins, sometimes also pubescent, very rarely glabrate, usually glandless; staminate spike usually about 1 cm. long, equalling or somewhat surpassing the



bract, sometimes elongate, up to 2 cm. long, and bearing 1 or 2 small pistillate bracts well above the base; all the valves of the capsule maturing seeds; seeds 1.4–1.8 mm. long.—MASSACHUSETTS: Jamaica Plain, *Faxon*; Winchester, Oct. 20, 1901, and Milton, Sept. 20, 1908, *Kennedy*; Westford, Aug., 1921, *Fletcher*; Waltham, Aug. 13, 1866, and Ipswich, Sept. 28, 1856, *Wm. Boott*; Rowley, Aug. 10, 1918, *A. P. Morse*; Middlesex Fells Reservation, Sept. 23, 1920, *Kidder* (N. E. B. C.); Canton, Sept. 30, 1903, *A. S. Pease*, no. 2825 (N. E. B. C.); sandy soil, open ground, Fall River, Aug. 15, 1913, *S. N. F. Sanford*, no. 395 (N. E. B. C.). RHODE ISLAND: waste ground, Middletown, Oct. 2, 1896, *M. B. Simmons* (N. E. B. C.). CONNECTICUT: dry hillside, Franklin, Aug. 28, 1906, *R. W. Woodward*; Saybrook, Oct. 4, 1908, *Kennedy*. MARYLAND: Salisbury, Sept., 1865, *Canby*; Bethesda, Sept. 10, 1899, *Steele*; woods near shore, Annapolis, Oct. 17, 1909, *H. H. Bartlett*, no. 1849 (hb. Deam). SOUTH CAROLINA: waste soil, Anderson, Aug. 24, 1920, *John Davis*, no. 1778. KENTUCKY: near Poor Fork P. O., Harlan Co., Aug., 1893, *Kearney*, no. 139. INDIANA: woods near Vernon, Jennings Co., July 23, 1922, *Deam*, no. 37,074; open exposed place on top of wooded knob near Brownstown, Jackson Co., Oct. 10, 1920, *Deam*, no. 33,535; open white and black oak woods near Corydon, Harrison Co., Sept. 5, 1915, *Deam*, no. 18,662; roadside near Worthington, Green Co., Sept. 22, 1921, *Deam*, no. 35,028; along a wood road near Princeton, Gibson Co., Sept. 21, 1921, *Deam*, no. 35,087; open woods near Metamora, Franklin Co., Sept. 17, 1915, *Deam*, no. 19,121; open woods near New Albany, Floyd Co., Sept. 1, 1912, *Deam*, no. 12,261; roadside near St. Anthony, Dubois Co., Sept. 29, 1925, *Deam*, no. 42,647; along low bank of Beanblossom Creek near Helmsburg, Brown Co., Oct. 15, 1911, *Deam*, no. 10,311; cultivated fields, Clarke Co., Aug. 30, 1909, *Deam*, no. 5437; roadside near Leavenworth, Crawford Co., Oct. 5, 1920, *Deam* no. 33,430. The Indiana specimens are all in hb. Deam. ILLINOIS: Urbana, Sept. 24, 1898, *Gleason*, no. 17; dry woods near Catlin, Vermilion Co., Sept. 23, 1912, *O. E. Lansing*, Jr., no. 3480; damp woods, Peoria, July, 1914, *MacDonald*; clayey bank of creek near Athens, Menard Co., Aug. 25, 1916, *Lansing & Sherff*, no. 28. MISSOURI: dry ground, Jackson Co., Aug. 14, 1893, *Bush*, no. 334A; St. Francois Co., Sept. 10, 1893, *Bush*, no. 121 (N. Y.); Jerome, Oct. 25, 1914, *J. H. Kellogg*, no. 519 (N. Y.). OKLAHOMA: edge of creek, near Pawhuska, Osage Co., Aug. 9, 1913, *Stevens*, nos. 1962 and 1988; moist woods near Tishomingo, Johnston Co., Oct., 1915, *H. W. Houghton*, no. 3339. TEXAS: low woods, Tarrant Co., Sept. 29, 1912, *Ruth*, no. 287; Weatherford, Oct. 20, 1902, *Tracy*, no. 8348 (distributed as *Parietaria pennsylvanica*).

The above-cited specimens show the range and scope of variation of what is doubtless the normal state of the species. *A. digyneia* Raf. was, however, apparently founded on an extreme, almost teratological,



form in which the staminate spikes are elongate and one or more of the usual two or three pistillate bracts are born on it well above its junction with the common peduncle, instead of being, as commonly, approximate at the summit of the latter. Sometimes, with still further elongation of the axis, these upper pistillate inflorescences develop subtending leaves and ultimately staminate spikes of their own, and the inflorescence thus passes into a normal branch. The form is of considerable morphological interest, as furnishing material for the study of the evolutionary relation between the congested inflorescence of the normal *virginica* type, the axillary spicate inflorescence of such species as *A. ostryaefolia* and *A. neomexicana*, and normal branches. Its lengthened spikes are, however, not associated with any other character, and it appears not to demand taxonomic recognition.

Of this, strictly speaking, typical form of the species, the following specimens have been seen. GEORGIA: dry hillside, Cobb Co., July 12, 1900, *Harper*, no. 28. INDIANA: pasture near Shawnee Bridge, Fountain Co., Aug. 25, 1915, *Deam*, no. 18,190 (hb. Deam). ILLINOIS: rich, wooded hillside, Grand Tower, Aug. 18, 1900 and July 4, 1902, *Gleason*, nos. 2458 and 2459; without definite locality or date, *Vasey*. TENNESSEE: near Wolf Creek Station, Cocke Co., Aug. 31, 1897, *Kearney*, no. 884 (N. Y.).

Similarly elongate staminate spikes occur in *A. gracilens*, var. *Fraseri* and might raise some question as to the application of Rafinesque's name. His description, however, and the more detailed one of Robin on which his is based, call for a "tomentose" stem and petioled, dentate, "cotonneuse" (translated by Rafinesque "villose") leaves 6 or 7 lines wide. Since the petioles in *A. gracilens*, var. *Fraseri* are very short and the leaves only obscurely crenate and particularly narrow even for that species (never over 1 cm. or about 5 lines, wide), there can be little doubt that *A. digyneia* was based on the plant here treated under that name.

Although many of the specimens above cited were distributed as *A. virginica*, *A. digyneia* is readily separable from that species. It is nearer *A. gracilens*; small individuals often closely approximate the habit, leaf-form and size of that species, and two specimens which I have seen (*Deam* nos. 19,121 and 42,647) are hardly to be separated from it except by the character of their pubescence. Nevertheless as stated in the introduction, the correlation of characters is ordinarily good and the plant seems best treated as a species.



*A. GRACILENS* Gray Man. 408 (1848). *A. virginica*  $\gamma$  *gracilens* Muell. Arg. Linnaea xxxiv. 45 (1865). *A. virginica*  $\gamma$  *gracilescens* Muell. Arg. in DC. Prod. xv, pt. 2. 870 (1866).—Stem pubescent with short incurved or ascending hairs, very rarely with a few spreading hairs, simple or in well-developed plants with horizontal, arcuate, or laxly ascending branches from the lower nodes; petioles pubescent like the stem,  $\frac{1}{8}$  to  $\frac{1}{4}$  the length of the blade, usually not longer than the inflorescence; blades of the primary leaves oblong-lanceolate to linear-lanceolate, 1.5–5.5 (8) cm., long (mostly 3–4 cm.), shallowly crenate, usually rather abruptly contracted to the obtuse or acutish apex, sometimes more gradually tapering, glabrous, with sparse appressed hairs above and puberulence on the nerves beneath, or more or less pubescent on one or both surfaces, the margins ciliolate; pistillate bract cut  $\frac{1}{4}$  to  $\frac{1}{2}$  its height (usually less than  $\frac{1}{2}$ ) into 9–11 broadly oblong, triangular-ovate, or broadly deltoid teeth, sparsely beset with long-stipitate whitish glands, red sessile glands, or both, sometimes long-ciliate, otherwise glabrous, or strigose on the nerves and margins, or more or less pubescent; staminate spike 5–15 mm. long, scarcely to conspicuously surpassing the bract; all valves of the capsules usually producing seed; seeds 1.3–2 mm. long.—Southern New Hampshire to Indiana and Wisconsin, south to Florida and Texas; apparently much more common southward. The following specimens are representative. NEW HAMPSHIRE: dry soil by roadside, Hampton Falls, Sept. 22, 1901, *E. F. Williams*. MASSACHUSETTS: damp, sandy soil, Bourne, Sept. 15, 1901, *Kennedy, Williams, & Fernald*, Pl. Exsicc. Grayanae, no. 7; sandy beach, No Bottom Pond, Brewster, Sept. 7, 1918, *Fernald & Long*, no. 17042 (N. E. B. C.); West Tisbury, Martha's Vineyard, Sept. 4, 1916, *Seymour*, no. 1257; dry, open field, Adams, Aug. 20, 1901, *M. A. Day*, no. 22. RHODE ISLAND: dry sands, Block Island, Sept. 14, 1913, *Fernald, Long & Torrey*, no. 9816. CONNECTICUT: dry field, Putnam, Sept. 5, 1909, *Bissell & Weatherby*, no. 2542. NEW JERSEY: dry woods, Mt. Arlington, Morris Co., Aug. 26, 1906, *Mackenzie*, no. 2348 (hb. Deam); in sand, Cold Spring, Aug. 30, 1917, *Gershoy*, no. 420. MARYLAND: Salisbury, Sept., 1865, *Canby*. VIRGINIA: sandy ballast of railroad, Poplar Springs, Aug. 8, 1921, *Grimes*, no. 4215; dry ground, region about Cape Charles, Aug. 27, 1923, *Tidestrom*, no. 11651; without locality, *Rugel*. NORTH CAROLINA: Dismal Swamp, South Mills, Sept. 1, 1893, *Boettcher*; dry soil, open scrub land near Kinston, Lenoir Co., July 9, 1922, *Randolph*, no. 562. FLORIDA: dry fertile fields, Duval Co., June, *Curtiss*, no. 3513; shady places, Myers, July-Aug., 1900, *Hitchcock*, no. 313; hammock, Orange Co., Aug. 8, 1902, *Fredholm*, no. 5474; along railroad, vicinity of Eustis, Lake Co., June 16–30, 1894, *Nash*, no. 1057. INDIANA: pasture near Kewanna, Fulton Co., Aug. 18, 1925, *Deam*, no. 42,162. WISCONSIN: without locality, Aug., 1881, *T. W. Parr*, no. 274. MISSISSIPPI: Cat Island, Aug. 26, 1900, *Tracy & Lloyd*, no. 279. LOUISIANA: without locality



*Hale*. OKLAHOMA: Sapulpa, Sept. 26, 1895, *Bush*, no. 1387 (N. Y.). TEXAS: woods near Handley, Nov. 16, 1912, *Ruth*, no. 336.

Dr. Gray cited no specimens in the original publication of *A. gracilens*. He undoubtedly included both the plant here taken as typical and var. *Fraseri*. Of the three specimens in the Gray Herbarium named by him (Virginia, *Rugel*, Mobile, *Bigelow*, and Louisiana, *Hale*) all of which may have been in his possession in 1848, two are the typical form and one the variety. Under these circumstances, Mueller's segregation of var. *Fraseri* should be taken as removing that element and the name kept for what is left.

*A. gracilens* is by far the most variable of the three species. Most New England specimens have the leaf-tissue glabrous, the pistillate bract beset with long-stalked whitish glands and long-ciliate, but otherwise glabrous, the staminate spikes short, and the seeds rather small, 1.3–1.6 mm. long. Further south the leaves are often more or less pubescent, the bract without stalked glands but with a few red sessile ones and often eciliate, but strigose on the nerves and margins or pubescent, the staminate spikes longer, and the seeds commonly larger, 1.6–2 mm. long. There would seem to be here the makings of two geographic varieties; but the characters are so thoroughly inconstant and combine in such a multiplicity of ways, that segregation appears to me impracticable. Should it ever be achieved, the name *A. gracilens* should go with the southern form, which is well represented by the *Rugel* specimen cited above (which might appropriately be designated as the type of the species) and less well by that of *Bigelow*.

The following varieties are more or less clearly distinguishable.

*A. GRACILENS* Gray, var. **Fraseri** (Muell. Arg.), n. comb. *A. virginica*  $\delta$  *Fraseri* Muell. Arg. *Linnaea* xxxiv. 44 (1865).—Whole plant more densely and coarsely pubescent than in most specimens of the typical form; stem generally slender and sub-virgate, the branches few, lax, and weakly developed; primary leaves linear-lanceolate to linear, 3–5 cm. long, not over 1 cm. wide, on petioles usually about  $\frac{1}{10}$  the length of the blade; staminate spikes greatly developed, 2–4 cm. long; pistillate bracts usually with red sessile glands but no stalked glands, if more than one, often distant on the lower part of the spike, not approximate near its base; two or three valves of the capsule producing seeds; seeds about 1.8 mm. long.—GEORGIA: dry hillside, Cobb Co., July 12, 1900, *Harper*, no. 28 in part (N. Y.; somewhat transitional). ILLINOIS: Cobden, July 25, 1886, *F. S. Earle*, no. 1029. ALABAMA: without locality, *Buckley*. ARKANSAS: Little Rock, June 25, 1885, *Hasse* (N. Y.); without



locality, *Dr. Pitcher* (N. Y.). LOUISIANA: Covington, July 13, 1920, *Arsène*, no. 11728 (N. Y.); without locality, *Hale*. OKLAHOMA: Grand River, Cherokee Nation, Aug., 1895, *J. H. Kimmons*. TEXAS: sandy woods, Hempstead, 1872, *Hall*, no. 565; Texarkana, Aug. 29, 1898, *Heller*, no. 4164.

Var. *Fraseri* shows the same extreme, well-nigh teratological development of the staminate spike that was noted in the typical form of *A. digyneia*. In this case, however, it is correlated with narrow, somewhat elongate leaves, a more or less distinctive habit, and a tendency toward denser pubescence. The combination seems to have established itself as a genetic entity and to call for the taxonomic recognition accorded it by Mueller. Material from Biloxi, Miss. (*Tracy*, no. 4495, *Lloyd & Tracy*, no. 200 (N. Y.)) is transitional to the typical form. Torrey gave a manuscript name to specimens of this variety, which was used for a time by Gray in the herbarium, but appears later to have been abandoned by both in favor of *A. gracilens*.

*A. GRACILENS* Gray, var. *MONOCOCCA* Engelm. in Gray, Man. ed. 2. 390 (1856). *A. virginica*  $\beta$  *monococca* Wood, Class Book 630 (1861). *A. monococca* Engelm. ex Muell. Arg. Linnaea xxxiv. 45 (1865), as syn.—Whole plant densely pubescent with appressed-ascending incurved and straight hairs of various lengths; well-developed plants with numerous stiffly ascending or sub-fastigate branches; leaves linear-lanceolate to linear, 2.5–3 cm. long, 5 mm. or less wide, the margins often revolute in drying, mostly on very short petioles; pistillate bracts pubescent and usually bristly-ciliate; staminate spikes 1 cm. or less long, not greatly exceeding the bracts; one valve only of the capsule maturing seed; seeds 1.8–2 mm. long.—MISSOURI: on the bank of the Mississippi, St. Louis, with *Aster oblongifolius*, *Solidago Drummondii*, etc., Sept. and Oct., 1844, *Engelmann* (isotype); barrens, Webb City, July 21, 1909, *E. J. Palmer*, no. 2523 (N. Y.). ARKANSAS: Sugarloaf Mt., *Bigelow* (N. Y.). KANSAS: open ground, Anderson Co., 1896, *Hitchcock*, no. 813. OKLAHOMA: field near Pawhuska, Osage Co., Aug. 11, 1913, *Stevens*, no. 2018; on the False Wichita between Ft. Cobb and Ft. Arbuckle, 1868, *Whipple Exped.* (N. Y.). TEXAS: gravel, College Station, July 5, 1900, *Reverchon*, no. 2160 (N. Y.). Also in southern Illinois, fide Gray, l. c.

Occasional capsules on a given plant, or even all the capsules of an individual of *A. gracilens* or var. *Fraseri* may mature only one seed. This character, like the great development of the staminate spike in var. *Fraseri*, might be regarded as accidental or teratological, but it correlates so generally in material from west of the Mississippi River with short, narrow leaves, dense and coarse pubescence, and sub-



fastigate branching, that it can hardly be considered otherwise than as genetically established. Englemann's original collection, as represented at the Gray Herbarium, consists of small plants in which the bushy habit characteristic of most specimens does not appear. Mackenzie, no. 415 from Westport, Mo., Oct. 5, 1895, is transitional to var. *Fraseri*. It is barely possible that *A. fruticulosa* Raf. is referable to var. *monococca*, but one can only guess as to that.

Rafinesque described, in a somewhat hit-or-miss manner, eight North American species in this group. Five of them are disposed of, after some fashion, above. Of the others, one was taken from Robin; the descriptions of the other two read as if made up from a doubtful memory or from confused notes. Judging from the one specimen of Rafinesque's which I have seen, they may have been based on fragmentary and inadequate specimens. At any rate, they call for combinations of characters which do not exist in the material seen by me and, if they did, would render any taxonomic division of the group well-nigh hopeless. Unless authentic specimens should be found, the identity of *A. brevipes*, *A. divaricata*, and *A. fruticulosa* must remain a mystery.

GRAY HERBARIUM.

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## CONTRIBUTION TO THE FLORA OF THE ISLANDS OF ST. PIERRE ET MIQUELON.

BRO. LOUIS ARSÈNE.

(Continued from p. 191.)

### PART III. GENERAL LIST OF ST. PIERRE ET MIQUELON PLANTS.

The following list is intended to represent, as far as possible, the whole flora, including introduced as well as indigenous plants growing in a wild state.

The names of introduced species are in italics. Discredited records are given with the indication of the species to which they have been transferred; they are enclosed in brackets. For each species, the sign × indicates in separate columns the names of those who reported it, or collected specimens: P. means De La Pylaie (Col. I); B., Beauteemps-Beaupré (Col. II); G., Gautier (Col. III); D., Delamare (Col. IV); A., Bro. Louis Arsène (Col. V).